

6th. 97 was registered at Concordia, Kans., Abilene and San Antonio, Tex., and 96 at Yuma, Ariz. At points in the south Atlantic states, the middle Mississippi and upper Ohio valleys, from eastern Kansas over Texas and in adjoining parts of western Arizona and southern California, the maximum readings were 90 or above. Voluntary observers in eastern Kansas, southeastern Texas, Oklahoma, southwestern Arizona, and southeastern California report maximum temperature above 100, the highest reading reported, 108, being noted at Twohig, Tex. The lowest maximum reading, 50, was noted at Saint Vincent, Minn., and the maximum temperature was below 60 on the Maine and southeast New England coasts, from Lake Superior over the Red River of the North Valley, and along the Washington coast.

MINIMUM TEMPERATURE.

At a number of stations in California the minimum temperature noted from the 6th to the 10th was the lowest ever reported for April.

The lowest temperature reported by a regular station of the Weather Bureau, 3 below zero, was registered at Saint Vincent, Minn., on the 14th. The minimum temperature fell below 10 over eastern Upper Michigan, in North Dakota and western Minnesota, and in an area covering the middle and northern Rocky Mountain regions. North of a line traced from the south New England coast, south of west to southwest New Mexico, thence northwestward to the Sierra Nevada Mountain range, and thence to northern Idaho, the minimum temperature was below 30. The highest minimum temperature, 65, was noted at Key West, Fla., and the minimum values were above 50 along the South Carolina, Georgia, Florida, and Gulf coasts.

LIMITS OF FREEZING WEATHER.

The southern limit of freezing weather is shown on Chart V by a line traced from northern New Jersey south of west over the Ohio and middle Mississippi valleys and thence to southern Arizona, and the western limit of freezing weather is shown by this line continued northwestward over eastern California and central Oregon, thence eastward over the valley of the Columbia River, and thence to the northwest coast of Washington.

RANGES OF TEMPERATURE.

The greatest daily range of temperature is shown in the table of miscellaneous meteorological data. The greatest monthly range of temperature, 60 to 70, was noted in areas on the northeast and middle-eastern slopes of the Rocky Mountains, and in the lower Missouri valley. From those districts the monthly range decreased eastward to less than 30 on the southeast New England coast and to 30 at Hatteras, N. C., southeastward to 20 at Key West, Fla., and to 30 along the immediate Gulf coast, and westward to 20 at Fort Canby, Wash., and to 30 along the immediate middle Pacific coast.

COLD WAVES.

During the 1st a cold wave advanced from Manitoba over

the upper Mississippi valley and Lake Superior, with a fall in temperature of 20 to 30, and temperature below zero north of North Dakota and eastern Montana. During the 2d this cold wave overspread the Ohio Valley and the Lake region and reached New York and New England, with temperature below freezing. The morning of the 3d the temperature had fallen 20, and was 14 to 16 below the freezing point in Nova Scotia. A moderate cold wave advanced from the Northwest over the Lake region and New England from the 3d to the 5th. On the 5th the temperature fell 20 to 30 in the Northwest, and the morning of that date was 16 below zero at Prince Albert, N. W. T. On the 6th the temperature fell slightly from the upper Mississippi valley over the middle Atlantic and New England states, and the morning of the 7th a fall in temperature of 20 was noted at Lynchburg, Va., and the temperature was below freezing generally in New England.

On the 7th the temperature fell 30 to 40 in the Northwest. On the 8th this cold wave overspread districts between the southern lake region and northwestern Texas, and on the 9th caused a slight fall in temperature in the middle Atlantic and New England states. A cold wave appeared in the Missouri Valley on the 12th, advanced over the upper lake region during the 13th, with freezing temperature at Davenport, Iowa, in the morning; extended over the Ohio and lower Mississippi valleys on the 14th, with freezing weather to central Indiana, reached the Gulf and western parts of the south Atlantic states and Virginia on the 15th, and by the morning of the 16th caused a fall in temperature of 20 on the south Atlantic coast. No cold waves traversed the country east of the Mississippi after the 16th.

FROST.

The morning of the 7th heavy frost injured foliage and pear buds about Keeler, Cal. Fruit blossoms were damaged about Eureka and Pasadena, Cal., the morning of the 8th. Damage by frost was reported at Fresno and Keeler, Cal., the morning of the 13th. Fruit was reported injured by frost at Kearney, Nebr., and Albert, N. Mex., the morning of the 14th. On the 15th heavy frost injured fruit and tender vegetation in Oklahoma, eastern Kansas, and western and northern Missouri. Frost damaged fruit blossoms at points in Kentucky, Tennessee, and Ohio the morning of the 16th. Tender vegetation about Lenoir, N. C., was killed by frost on the 18th. Fruit about Montrose, Colo., was slightly damaged the morning of the 19th. Frost nipped fruit blooms and injured garden vegetables in northern New Mexico, Oklahoma, and southwestern Kansas on the 20th. Heavy frost was reported at points in southern Kansas and Missouri on the 21st. Considerable damage by frost was reported in eastern Tennessee and northeastern Alabama the morning of the 22d. The morning of the 23d frost injured tender vegetation from eastern Kansas over Missouri, Tennessee, and western North Carolina. On the 24th the frost line extended southward over the Atlantic coast states to northern Georgia. The morning of the 30th heavy frost was reported at Levan, Utah.

PRECIPITATION (expressed in inches and hundredths).

The distribution of precipitation over the United States and Canada for April, 1893, as determined from reports of more than 2,000 stations, is exhibited on Chart III. In the table of miscellaneous meteorological data the total precipitation and the departure from the normal are given for regular stations of the Weather Bureau. The figures opposite the names of the geographical districts in the columns for precipitation and departure from the normal show, respectively, the averages for the several districts. The normal for any district

may be found by adding the departure to the current mean when the precipitation is below the normal and subtracting when above.

In April the monthly precipitation is usually greatest along the Pacific coast north of the 40th parallel, and at points in the lower Mississippi valley, where it exceeds 8.00. It is 4.00 to 6.00 generally in the Gulf and south Atlantic states, Kentucky, Tennessee, and southern Missouri, on the southeast New England coast, and in central Utah. Over a large

part of the Rocky Mountain and plateau regions the monthly precipitation is less than 1.00.

In April, 1893, the monthly precipitation was greatest along the immediate Pacific coast north of the 40th parallel, and in areas in the Ohio Valley, Missouri, and northern Arkansas, where it exceeded 10.00. The monthly amount exceeded 6.00 in the Sierra Nevada Mountains, Cal., at elevated stations in central Colorado, and in an area extending over the Ohio Valley, and thence to Oklahoma and southeastern Kansas, and was in excess of 4.00 generally in the Mississippi, Ohio, and lower Missouri valleys, the southern lake region, Pennsylvania, New Jersey, on the south New England coast, and in northern Idaho. No precipitation was reported generally in New Mexico, Arizona, and extreme southeastern California. In areas covering the interior of the south Atlantic states and parts of the Florida Peninsula, from central and western Nebraska to the Rio Grande River, and generally over the Rocky Mountain and plateau regions, except in areas in the middle and northern Rocky Mountain regions, the monthly precipitation was less than 1.00.

DEPARTURE FROM NORMAL PRECIPITATION.

The following table shows for certain stations, as reported by voluntary observers, (1) the average precipitation for April for a series of years; (2) the length of record during which the observations have been taken and from which the average has been computed; (3) the total precipitation for April, 1893; (4) the departure of the current month from the average; (5) and the extremes for April during the period of observation and the years of occurrence:

| State and station. | (1) Average for the month of April. | (2) Length of record. | (3) Total for April, 1893. | (4) Departure from average. | (5) Extremes for April. | | | |
|---------------------------|-------------------------------------|-----------------------|----------------------------|-----------------------------|-------------------------|-------|----------------|------------|
| | | | | | Greatest. | | Least. | |
| | | | | | Am't. | Year. | Am't. | Year. |
| <i>Arizona.</i> | <i>Inches.</i> | <i>Years.</i> | <i>Inches.</i> | <i>Inches.</i> | <i>Inches.</i> | | <i>Inches.</i> | |
| Fort Apache | 0.87 | 17 | 0.00 | - 0.87 | 1.77 | 1878 | 0.00 | 1893 |
| Fort Mohave | 0.39 | 22 | 0.00 | - 0.39 | 4.05 | 1871 | 0.00 | 1880, 1893 |
| Whipple Barracks | 1.63 | 21 | 0.00 | - 1.63 | 2.86 | 1878 | 0.00 | 1893 |
| <i>Arkansas.</i> | | | | | | | | |
| Keesees Ferry | 4.13 | 11 | 8.33 | + 4.20 | 8.33 | 1893 | 1.57 | 1889 |
| <i>California.</i> | | | | | | | | |
| Fort Bidwell | 1.68 | 21 | 1.88 | + 0.20 | 5.60 | 1880 | 0.16 | 1888 |
| Riverside | 1.00 | 12 | 0.26 | - 0.74 | 2.15 | 1885 | 0.06 | 1890 |
| <i>Colorado.</i> | | | | | | | | |
| Las Animas | 1.37 | 11 | 0.01 | - 1.36 | 2.64 | 1886 | 0.01 | 1893 |
| <i>Florida.</i> | | | | | | | | |
| Merritts Island | 4.04 | 15 | 0.32 | - 3.72 | 9.74 | 1878 | 0.32 | 1893 |
| <i>Georgia.</i> | | | | | | | | |
| Forsyth | 3.86 | 19 | 4.30 | + 0.44 | 9.59 | 1883 | 0.55 | 1888, 1892 |
| <i>Idaho.</i> | | | | | | | | |
| Boise Barracks | 1.62 | 19 | 1.86 | + 0.24 | 2.43 | 1886 | 0.00 | 1890 |
| Fort Sherman | 1.58 | 9 | 4.75 | + 3.17 | 4.75 | 1893 | 0.00 | 1885 |
| <i>Indiana.</i> | | | | | | | | |
| Lafayette | 3.42 | 13 | 6.65 | + 3.23 | 7.51 | 1892 | 0.84 | 1889 |
| <i>Indian Territory.</i> | | | | | | | | |
| Fort Supply | 2.57 | 14 | 0.25 | - 2.32 | 8.60 | 1885 | 0.25 | 1893 |
| <i>Iowa.</i> | | | | | | | | |
| Oresco | 2.32 | 21 | 5.95 | + 3.63 | 5.95 | 1893 | 1.11 | 1883 |
| <i>Kansas.</i> | | | | | | | | |
| Independence | 3.78 | 21 | 6.35 | + 2.57 | 6.68 | 1889 | 1.64 | 1883 |
| Salina | 2.56 | 10 | ..... | ..... | 7.30 | 1885 | 0.16 | 1888 |
| <i>Louisiana.</i> | | | | | | | | |
| Grand Coteau | 4.47 | 10 | 2.12 | - 2.35 | 10.64 | 1890 | 0.87 | 1891 |
| <i>Maine.</i> | | | | | | | | |
| Orono | 2.85 | 23 | ..... | ..... | 5.08 | 1887 | 1.12 | 1892 |
| <i>Maryland.</i> | | | | | | | | |
| Cumberland | 2.34 | 21 | 3.96 | + 1.62 | 6.50 | 1874 | 0.60 | 1879 |
| <i>Michigan.</i> | | | | | | | | |
| Kalamazoo | 2.57 | 17 | 5.32 | + 2.75 | 8.00 | 1880 | 0.92 | 1876 |
| <i>Missouri.</i> | | | | | | | | |
| Sedalia | 3.24 | 14 | 10.06 | + 6.82 | 10.06 | 1893 | 1.33 | 1888 |
| <i>Montana.</i> | | | | | | | | |
| Fort Custer | 1.11 | 12 | ..... | ..... | 2.16 | 1887 | 0.51 | 1885 |
| <i>Nebraska.</i> | | | | | | | | |
| Fort Robinson | 1.90 | 9 | 1.30 | - 0.60 | 3.93 | 1892 | 0.47 | 1886 |
| Genoa (near) | 2.83 | 17 | 2.22 | - 0.61 | 5.32 | 1885 | 1.20 | 1878 |
| <i>Nevada.</i> | | | | | | | | |
| Browns | 0.44 | 22 | 1.00 | + 0.56 | 1.47 | 1878 | 0.00 | * |
| Carson City | 0.93 | 16 | 1.01 | + 0.08 | 5.02 | 1880 | 0.03 | 1889 |
| <i>New Hampshire.</i> | | | | | | | | |
| Hanover | 2.34 | 22 | 1.64 | - 0.70 | 3.40 | 1874 | 0.38 | 1872 |
| <i>New Mexico.</i> | | | | | | | | |
| Fort Wingate | 0.92 | 22 | 0.00 | - 0.92 | 2.70 | 1877 | 0.00 | 1893 |
| <i>New York.</i> | | | | | | | | |
| Cooperstown | 2.88 | 22 | 2.96 | + 0.08 | 4.10 | 1874 | 0.98 | 1881 |
| Plattsburg Barracks | 1.62 | 22 | 2.11 | + 0.49 | 3.98 | 1871 | 0.30 | 1881 |

Departures from average precipitation—Continued.

| State and station. | (1) Average for the month of April. | (2) Length of record. | (3) Total for April, 1893. | (4) Departure from average. | (5) Extremes for April. | | | |
|------------------------|-------------------------------------|-----------------------|----------------------------|-----------------------------|-------------------------|-------|----------------|------------|
| | | | | | Greatest. | | Least. | |
| | | | | | Am't. | Year. | Am't. | Year. |
| <i>North Carolina.</i> | <i>Inches.</i> | <i>Years.</i> | <i>Inches.</i> | <i>Inches.</i> | <i>Inches.</i> | | <i>Inches.</i> | |
| Lenoir | 3.57 | 21 | 2.50 | - 1.07 | 7.80 | 1874 | 1.30 | 1876, 1885 |
| <i>Oklahoma.</i> | | | | | | | | |
| Fort Reno | 2.33 | 10 | 1.92 | - 0.41 | 6.02 | 1890 | 0.89 | 1887 |
| Fort Sill | 2.87 | 21 | 0.37 | - 2.50 | 8.77 | 1890 | 0.37 | 1893 |
| <i>Oregon.</i> | | | | | | | | |
| Bandon | 4.93 | 15 | ..... | ..... | 11.35 | 1891 | 0.97 | 1885 |
| <i>Pennsylvania.</i> | | | | | | | | |
| Dyberry | 2.44 | 21 | 3.65 | + 1.21 | 5.07 | 1874 | 0.80 | 1882 |
| Grampian | 3.39 | 22 | 4.89 | + 1.50 | 6.11 | 1874 | 1.35 | 1870 |
| Wellboro | 4.40 | 14 | 5.38 | + 0.98 | 10.77 | 1886 | 0.61 | 1892 |
| <i>South Carolina.</i> | | | | | | | | |
| Statesburg | 2.22 | 12 | 0.65 | - 1.57 | 4.17 | 1883 | 0.65 | 1893 |
| <i>South Dakota.</i> | | | | | | | | |
| Fort Sully | 2.09 | 22 | 3.50 | + 1.41 | 4.82 | 1892 | 0.14 | 1884 |
| <i>Texas.</i> | | | | | | | | |
| Austin | 3.62 | 20 | 0.20 | - 3.42 | 7.78 | 1884 | T. | 1887 |
| Silver Falls | 2.63 | 7 | 0.03 | - 2.60 | 4.58 | 1891 | 0.00 | 1892 |
| <i>Utah.</i> | | | | | | | | |
| Terrace | 0.40 | 20 | 0.24 | - 0.16 | 1.74 | 1884 | 0.00 | * |
| <i>Vermont.</i> | | | | | | | | |
| Stratford | 2.65 | 20 | 2.12 | - 0.53 | 12.20 | 1874 | 0.60 | 1873, 1881 |
| <i>Virginia.</i> | | | | | | | | |
| Dale Enterprise | 3.60 | 13 | 2.86 | - 0.74 | 7.13 | 1882 | 0.75 | 1881 |
| <i>Washington.</i> | | | | | | | | |
| Fort Townsend | 1.64 | 17 | 3.74 | + 2.10 | 3.74 | 1893 | 0.38 | 1877 |
| <i>West Virginia.</i> | | | | | | | | |
| Parkersburg | 3.26 | 8 | 5.13 | + 1.87 | 5.13 | 1893 | 2.20 | 1891 |
| <i>Wisconsin.</i> | | | | | | | | |
| Embarrass | 2.78 | 22 | ..... | ..... | 5.20 | 1880 | 1.20 | 1889 |
| Madison | 4.37 | 20 | 4.53 | + 0.16 | 5.48 | 1880 | 0.96 | 1887 |
| <i>Wyoming.</i> | | | | | | | | |
| Fort Washakie | 1.72 | 10 | 2.06 | + 0.34 | 3.73 | 1883 | 0.51 | 1888 |

* Frequently.

The monthly precipitation was in excess of the usual amount for April in the Lake region and thence over the Ohio, middle and upper Mississippi and middle and lower Missouri valleys, the northern Rocky Mountain and plateau regions and thence to the Pacific coast north of the 40th parallel, and on the Texas, New Jersey, and south New England coasts; elsewhere less than the usual amount of precipitation was reported. The greatest excess in precipitation was noted on the north Pacific coast, and from east-central Missouri over central Illinois, where the amount was 6.00 to 7.00 inches greater than usual. On the south New England and New York coasts, in an area extending from southern Ohio over southern Missouri, at Galveston, Tex., over Washington, and along the immediate Oregon coast the excess was more than 2.00. The most marked deficiency, 4.1, was reported at Abilene, Tex., and in the south Atlantic states, northern Louisiana, and west-central Mississippi the monthly amount was 2.00 to 3.00 inches less than the April average.

Considered by districts the average percentage of the normal in districts where the monthly precipitation was in excess was about as follows: North Pacific coast, 254; upper Mississippi valley, 224; Lake region, 159; Ohio Valley and Tennessee, 155; Missouri Valley, 145; New England, 112. In districts where the precipitation was deficient the percentage of the normal was about as follows: Southeast slope of the Rocky Mountains, 6; south Pacific coast, 17; middle-eastern slope of the Rocky Mountains, 20; Key West, Fla., 41; south Atlantic states, 44; east Gulf states, 64; northeast slope of the Rocky Mountains, 80. In the middle Atlantic and west Gulf states, the extreme northwest, over the middle and northern plateau regions, and along the middle Pacific coast, the precipitation averaged about normal.

PRECIPITATION, JANUARY TO APRIL.

For the period January 1 to April 30, 1893, inclusive, the precipitation averaged about the normal amount in the middle Atlantic and New England states, the Ohio Valley and Tennessee, the lower lake region, on the northeast slope of the Rocky Mountains, and over the southern plateau region.

In the upper lake region, the extreme northwest, the upper Mississippi and Missouri valleys, over the middle and northern plateau region, and along the north and south Pacific coasts it was one-tenth to two-tenths greater than usual. On the middle and southeast slopes of the Rocky Mountains about one-third, and in the south Atlantic and Gulf states, and along the middle Pacific coast six-tenths to eight-tenths of the usual amount of precipitation fell.

YEARS OF GREATEST PRECIPITATION FOR APRIL.

At stations on the southeast New England coast, in the Ohio and middle and upper Mississippi valleys, and on the north Pacific coast the precipitation for the current month was the greatest ever reported for April.

In Maryland, the District of Columbia, and eastern Virginia the greatest precipitation for April occurred in 1889; over the west part of the middle plateau region in 1887; over the east parts of the middle and northern plateau regions in 1886; on the Maine coast in 1884; in the interior of the south Atlantic states in 1883; along the middle and south Atlantic coasts, and in the lower lake region and upper Ohio valley in 1880; and in areas from New England to the lower Mississippi valley in 1874.

YEARS OF LEAST PRECIPITATION FOR APRIL.

At Charlotte, N. C., Statesburg, S. C., Merritts Island, Fla., Abilene, Tex., Santa Fe and Fort Wingate, N. Mex., Fort Supply, Ind. T., Dodge City, Kans., Fort Sill, Okla., North Platte, Nebr., Fort Buford, N. Dak., and Keeler, Cal., the precipitation for the current month was the least ever reported for April.

On the middle and south Pacific coasts the least precipitation for April was reported in 1888; in the west Gulf states in 1887; and on the north Pacific coast in 1885.

EXCESSIVE PRECIPITATION.

The following tables show, by states, the number of stations reporting monthly precipitation to equal or exceed 10.00; precipitation to equal or exceed 2.50 in 24 hours; and precipitation to equal or exceed 1.00 in 1 hour in April, 1893:

Monthly precipitation to equal or exceed 10.00.

| State. | Number of stations. | State. | Number of stations. |
|------------------|---------------------|------------------|---------------------|
| Missouri | 28 | Indiana | 5 |
| Illinois | 10 | California | 4 |
| Washington | 9 | Kentucky | 3 |
| Arkansas | 6 | Oregon | 1 |

Precipitation to equal or exceed 2.50 in 24 hours.

| State. | Number of stations. | Dates. | State. | Number of stations. | Dates. |
|-------------------|---------------------|---|------------------------|---------------------|---------------------------|
| Missouri | 26 | 13, 13-14, 18-19, 19-20, 24-25, 25-26, 29, 29-30, 30. | Indiana | 4 | 10-11, 11, 19, 20, 28-29. |
| Arkansas | 18 | 11, 12-13, 12-14, 13, 14, 26, 29-30, 30. | Washington | 4 | 19, 19-20. |
| Alabama | 14 | 12, 12-13, 19, 19-20. | North Carolina | 3 | 19, 19-20. |
| Georgia | 11 | 19-20. | Kentucky | 3 | 14, 30. |
| California | 9 | 3, 4, 4-5, 5-6, 7. | Indian Territory | 2 | 28-29. |
| Louisiana | 8 | 14, 18-19, 19, 30. | Kansas | 2 | 19, 25. |
| Tennessee | 8 | 12-13, 12-14, 13, 13-14. | South Dakota | 1 | 25-26. |
| Florida | 8 | 19-20. | Ohio | 1 | 28-29. |
| Mississippi | 6 | 11-12, 13, 13-14, 30. | Oklahoma | 1 | 29-30. |
| Illinois | 4 | 3-4, 11, 11-12, 20, 30. | Oregon | 1 | 19-20. |
| | | | Texas | 1 | 18-19. |
| | | | Virginia | 1 | 19-20. |
| | | | Minnesota | 1 | 20. |
| | | | Nebraska | 1 | 25-26. |

Precipitation to equal or exceed 1.00 in 1 hour.

| State. | Number of stations. | Dates. | State. | Number of stations. | Dates. |
|-----------------|---------------------|-----------------------------|----------------|---------------------|---------|
| Texas | 8 | 10, 14, 18, 19, 26, 28, 30. | Missouri | 3 | 11, 13. |
| Louisiana | 4 | 14, 19. | Arkansas | 2 | 11, 30. |
| Florida | 3 | 16, 20, 28. | Illinois | 1 | 28. |
| | | | Nebraska | 1 | 24. |

Table of excessive precipitation, April, 1893.

| State and station. | Monthly rainfall 10 inches, or more. | Rainfall 2.50 inches, or more, in 24 hours. | | Rainfall 1 inch, or more, in one hour. | | |
|-----------------------------|---|--|-------|--|-------|------|
| | | Amt. | Day. | Amt. | Time. | Day. |
| Alabama. | | | | | | |
| Auburn..... | Inches. | 4.60 | 19-20 | Inches. | h. m. | |
| Claiborne Landing..... | | 2.94 | 19-20 | | | |
| Decatur a..... | | 3.98 | 12-13 | | | |
| Florence b..... | | 5.45 | 12 | | | |
| Highland Home..... | | 2.74 | 19-20 | | | |
| Lynn a..... | | 2.75 | 12-13 | | | |
| Maysville..... | | 3.50 | 12-13 | | | |
| Mobile..... | | 2.77 | 19-20 | | | |
| Montgomery..... | | 2.58 | 19-20 | | | |
| Opelika..... | | 4.40 | 19-20 | | | |
| Sturdevant..... | | 2.80 | 19 | | | |
| Tallahassee Falls..... | | 3.12 | 19-20 | | | |
| Tusculum a..... | | 3.82 | 12-13 | | | |
| Tusculum b..... | | 3.83 | 12-13 | | | |
| Arkansas. | | | | | | |
| Ashdown..... | | 3.60 | 30 | | | |
| Brinkley..... | | 3.10 | 12-13 | | | |
| Camden b..... | | 2.84 | 30 | | | |
| Conway..... | | 4.17 | 30 | | | |
| Corning..... | 10.21 | 4.17 | 30 | | | |
| Dallas..... | | | | 1.50 | 1 00 | 30 |
| Fayetteville..... | 11.73 | 5.00 | 29-30 | | | |
| Fort Smith..... | | 4.98 | 29-30 | | | |
| Helena a..... | | 7.05 | 12-14 | | | |
| Helena b..... | | 5.89 | 13-14 | | | |
| Hot Springs..... | | 2.56 | 13-14 | | | |
| Do..... | | 2.75 | 30 | | | |
| Keesee Ferry..... | | | | 1.10 | 0 30 | 11 |
| Kirby..... | | 3.48 | 30 | | | |
| Madding..... | 11.14 | 2.88 | 30 | | | |
| Mount Nebo..... | | 3.00 | 30 | | | |
| Newport a..... | | 3.15 | 13-14 | | | |
| Rogers..... | 13.22 | 2.75 | 11 | | | |
| Do..... | | 2.73 | 26 | | | |
| Do..... | | 3.47 | 29-30 | | | |
| Russellville..... | | 3.45 | 30 | | | |
| Searcy..... | 10.04 | 4.69 | 30 | | | |
| Winslow..... | 10.54 | 4.66 | 29-30 | | | |
| California. | | | | | | |
| Cloverdale..... | | 3.61 | 7 | | | |
| Crescent City..... | 12.12 | 3.10 | 4 | | | |
| Crescent City L. H..... | 13.78 | | | | | |
| Edmonton..... | | 2.80 | 5 | | | |
| Georgetown..... | | 2.98 | 5-6 | | | |
| Grass Valley b..... | | 2.55 | 7 | | | |
| Middletown..... | | 3.06 | 4-5 | | | |
| Placerville b..... | | 2.88 | 6 | | | |
| Shasta..... | 10.10 | 3.65 | 5 | | | |
| Upper Mattole..... | 10.96 | 3.62 | 3 | | | |
| Florida. | | | | | | |
| Bristol..... | | 6.03 | 19-20 | | | |
| Chattahoochee Landing..... | | 5.50 | 19-20 | | | |
| Federal Point..... | | 3.74 | 19-20 | | | |
| Jacksonville..... | | 2.54 | 19-20 | 1.70 | 1 00 | 20 |
| Jupiter..... | | | | 1.10 | 0 40 | 16 |
| Lake City..... | | 3.15 | 19-20 | | | |
| Moseley Hall..... | | 5.38 | 19-20 | | | |
| Plant City..... | | | | 1.03 | 0 30 | 28 |
| Saint Francis Barracks..... | | 3.50 | 19-20 | | | |
| Tallahassee..... | | 5.70 | 19-20 | | | |
| Georgia. | | | | | | |
| Alapaha..... | | 4.12 | 19-20 | | | |
| Albany..... | | 4.00 | 19-20 | | | |
| Darien..... | | 2.60 | 19-20 | | | |
| Forsyth..... | | 3.23 | 19-20 | | | |
| Fort Gaines..... | | 2.61 | 19-20 | | | |
| Homerville..... | | 4.32 | 19-20 | | | |
| Morgan..... | | 2.50 | 19-20 | | | |
| Piscola..... | | 6.10 | 19-20 | | | |
| Poulan..... | | 4.33 | 19-20 | | | |
| Quitman b..... | | 5.10 | 19-20 | | | |
| Thomasville..... | | 5.50 | 19-20 | | | |
| Illinois. | | | | | | |
| Atwood..... | 11.82 | 2.66 | 20 | | | |
| Carlisle..... | 10.94 | | | | | |
| Flora..... | 14.01 | 3.00 | 11 | | | |
| Do..... | | 2.73 | 30 | | | |
| Greenville..... | 11.86 | | | | | |
| Mascoutah..... | 10.20 | | | | | |
| Olney a..... | 10.44 | | | | | |
| Olney b..... | 13.64 | | | | | |
| Pana..... | 16.56 | 5.13 | 3-4 | | | |
| Rantoul..... | | | | 1.13 | 1 00 | 28 |
| Shawneetown..... | 10.55 | | | | | |
| Springfield..... | 10.23 | 2.50 | 11-12 | | | |
| Indiana. | | | | | | |
| Farmland..... | 10.79 | | | | | |
| Jasper..... | 10.72 | 2.60 | 11 | | | |
| Marengo..... | 16.60 | 5.00 | 11 | | | |
| Do..... | | 4.00 | 19 | | | |
| Muncie..... | 15.00 | 2.50 | 11 | | | |
| Do..... | | 2.50 | 20 | | | |
| Do..... | | 2.75 | 28-29 | | | |
| Vevay..... | | 2.75 | 10-11 | | | |
| Vincennes..... | 10.60 | | | | | |
| Indian Territory. | | | | | | |
| Enfala..... | | 4.03 | 28-29 | | | |
| Tulsa..... | | 2.50 | 28-29 | | | |
| Kansas. | | | | | | |
| Columbus..... | | 3.24 | 25 | | | |

Table of excessive precipitation—Continued.

| State and station. | Monthly rainfall in inches, or more. | Rainfall 2.50 inches, or more, in 24 hours. | | Rainfall of 1 inch, or more, in one hour. | | |
|--------------------------|---|--|-------|---|-------|------|
| | | Amt. | Day. | Amt. | Time. | Day. |
| Kansas—Continued. | | | | | | |
| Yates Center | Inches. | Inches. | | Inches | h. m. | |
| Kentucky. | | 2.54 | 19 | | | |
| Caddo | 14.30 | | | | | |
| Carrollton | 11.10 | | | | | |
| Earlington | 10.91 | | | | | |
| Franklin | 2.50 | 14 | | | | |
| Russellville | 2.63 | 14 | | | | |
| Wickliffe | 3.18 | 30 | | | | |
| Louisiana. | | | | | | |
| Calhoun | 4.46 | 14 | | | | |
| Farmerville | 4.20 | 14 | | | | |
| Do | 3.25 | 30 | | | | |
| Franklin | | | | 2.00 | 2 00 | 14 |
| Homer | 5.12 | 14 | | | | |
| Do | 2.60 | 30 | | | | |
| Houma | 4.72 | 18-19 | | | | |
| Many | 4.35 | 30 | | 1.50 | 1 00 | 14 |
| Monroe | 3.03 | 14 | | | | |
| New Orleans | 2.88 | 19 | | 1.40 | 1 00 | 19 |
| Paincourtville | | | | 1.45 | 1 15 | 14 |
| Plain Dealing | 3.00 | 14 | | | | |
| Sugar Experiment Station | 2.61 | 19 | | | | |
| Minnesota. | | | | | | |
| Collegeville | | 3.08 | 20 | | | |
| Mississippi. | | | | | | |
| Batesville | | 3.27 | 11-12 | | | |
| Clarksville | | 2.81 | 13-14 | | | |
| Corinth | | 5.53 | 13-14 | | | |
| University | | 3.92 | 13 | | | |
| Water Valley | | 2.53 | 13 | | | |
| Woodville | | 2.60 | 30 | | | |
| Missouri. | | | | | | |
| Appleton City | | 2.95 | 19 | | | |
| Arlington | | 2.50 | 30 | | | |
| Big Piney | 10.22 | 2.97 | 28 | | | |
| Boonville | 12.55 | 3.11 | 19-20 | | | |
| Bryant | | 2.57 | 29-30 | | | |
| Cabool | 10.13 | | | | | |
| Columbia | 11.30 | | | | | |
| Dixon | 12.19 | 5.50 | 29 | | | |
| Edge Hill | 12.19 | 2.57 | 30 | | | |
| Eight Mile | | 6.08 | 18-19 | | | |
| Eldon | 12.82 | | | | | |
| Fayette | 10.70 | | | | | |
| Fox Creek | 10.35 | | | | | |
| Fulton | | 2.95 | 19-20 | | | |
| Glensted | 17.49 | 5.20 | 18-19 | | | |
| Do | | 2.75 | 25-26 | | | |
| Do | | 2.70 | 29 | | | |
| Grovedale | 11.10 | 2.50 | 30 | | | |
| Hastain | 10.48 | | | | | |
| Humansville | | 2.50 | 19 | | | |
| Kansas City | | | | 1.08 | 1 05 | 11 |
| Lamar | 10.56 | 3.90 | 18-19 | | | |
| Lebanon | 13.17 | 3.00 | 19 | | | |
| Do | | 3.00 | 28 | | | |
| Liberty | | | | 0.94 | 0 15 | 11 |
| Malden | | 2.75 | 13 | | | |
| Neosho | | 3.50 | 24-25 | | | |
| New Haven | 10.38 | | | | | |
| Oakfield | 11.08 | | | | | |
| Osceola | 11.48 | 2.62 | 19 | | | |
| Oto | | 2.50 | 29 | | | |
| Panacea | 10.89 | 3.32 | 29-30 | | | |
| Poplar Bluff | 10.97 | 4.00 | 13-14 | 2.25 | 1 00 | 13 |
| Rolla | 11.71 | 5.10 | 29-30 | | | |
| Saint Charles | 11.01 | | | | | |
| Saint Louis (W. B.) | 10.84 | 2.86 | 29-30 | | | |
| Saint Louis (Vol. Ober) | 11.34 | | | | | |
| Sedalia | 10.06 | 3.28 | 19 | | | |
| Steeleville | 12.05 | 4.51 | 29-30 | | | |
| Vermont | 10.77 | | | | | |
| Warrensburg | | 2.51 | 18-19 | | | |
| Warrenton | 10.74 | | | | | |
| Wheatland | 12.61 | 2.96 | 19 | | | |
| Whiteside | 10.42 | | | | | |
| Nebraska. | | | | | | |
| Omaha | | | | 1.40 | 0 47 | 24 |
| Stanton | | 2.50 | 25-26 | | | |
| North Carolina. | | | | | | |
| Columbus | | 3.32 | 19-20 | | | |
| Highlands | | 4.05 | 19-20 | | | |
| Horse Cove | | 2.92 | 19 | | | |
| Ohio. | | | | | | |
| Northwood | | 2.90 | 28-29 | | | |
| Oklahoma Territory. | | | | | | |
| Keokuk Falls | | 2.70 | 29-30 | | | |
| Oregon. | | | | | | |
| Astoria | 13.39 | 3.40 | 19-20 | | | |
| South Dakota. | | | | | | |
| Flandreau | | 3.92 | 25-26 | | | |
| Tennessee. | | | | | | |
| Ashwood | | 2.55 | 13 | | | |
| Charleston | | 2.61 | 12-13 | | | |
| Chattanooga | | 2.77 | 12-13 | | | |
| Clarksville | | 3.04 | 13-14 | | | |
| Columbia | | 2.50 | 12-13 | | | |
| Hohenwald | | 3.14 | 12-13 | | | |
| Lynnville | | 2.78 | 12-13 | | | |
| Waynesboro | | 3.90 | 12-14 | | | |

Table of excessive precipitation—Continued.

| State and station. | Monthly rainfall in inches, or more. | Rainfall 2.50 inches, or more, in 24 hours. | | Rainfall of 1 inch, or more, in one hour. | | |
|----------------------|---|--|-------|---|--------------|------|
| | | Amt. | Day. | Amt. | Time. | Day. |
| <i>Texas.</i> | | | | | | |
| Albany | <i>Inches.</i> | <i>Inches.</i> | | <i>Inches</i> | <i>h. m.</i> | |
| Galveston | | 4.31 | 18-19 | 1.62 | 1 00 | 10 |
| Haskell | | | | 1.07 | 1 00 | 18 |
| New Braunfels | | | | 2.00 | 2 00 | 28 |
| San Antonio | | | | 1.64 | 1 30 | 14 |
| Stella | | | | 1.10 | 0 50 | 14 |
| Do. | | | | 1.30 | 1 05 | 26 |
| Do. | | | | 1.42 | 0 45 | 30 |
| Sugar Land | | | | 1.27 | 1 00 | 26 |
| Do. | | | | 2.10 | 2 00 | 30 |
| Tyler | | | | 1.82 | 1 30 | 19 |
| <i>Virginia.</i> | | | | | | |
| Avon | | 2.60 | 19-20 | | | |
| <i>Washington.</i> | | | | | | |
| Aberdeen | 12.29 | 2.63 | 19 | | | |
| East Clallam | 11.16 | | | | | |
| Elbe | 10.45 | | | | | |
| Ferry | 12.31 | | | | | |
| Fort Canby | 10.89 | 3.74 | 19-20 | | | |
| Neah Bay | 14.02 | 3.33 | 19-20 | | | |
| Olympia | 10.18 | | | | | |
| Silver Creek | 10.54 | | | | | |
| Tatoosh Island | 13.03 | 3.72 | 19-20 | | | |

Received too late for publication in March Review.

| | | | | | | |
|--------------------|-------|------|-------|--|--|--|
| California. | | | | | | |
| Julian | 14.42 | 3.89 | 20-21 | | | |
| Upper Mattole | 18.05 | 4.25 | 11-12 | | | |
| Do. | | 3.11 | 18-19 | | | |
| Oregon. | | | | | | |
| Cascade Locks | 10.03 | | | | | |

MAXIMUM RAINFALL IN ONE HOUR OR LESS.

The following table is a record of the heaviest rainfall during April, 1893, for periods of five and ten minutes and one hour, as reported by regular stations of the Weather Bureau furnished with self-registering gauges:

Maximum rainfall in one hour or less.

| Station. | Maximum fall in— | | | | | |
|----------------------|------------------|--------|---------|--------|---------|-------|
| | 5 min. | Date. | 10 min. | Date. | 1 hour. | Date. |
| Atlanta, Ga.* | Inch. | | Inch. | | Inch. | |
| Bismarck, N. Dak.* | 0.10 | 20 | 0.15 | 20 | 0.30 | 19 |
| Boston, Mass.* | 0.06 | 8 | 0.08 | 8 | 0.20 | 21 |
| Buffalo, N. Y.* | 0.10 | 7 | 0.20 | 7 | 0.45 | 7 |
| Cincinnati, Ohio | 0.18 | 30 | 0.24 | 30 | 0.33 | 11 |
| Chicago, Ill. | 0.24 | 26 | 0.34 | 26 | 0.60 | 26 |
| Cleveland, Ohio* | 0.04 | 30 | 0.07 | 30 | 0.22 | 30 |
| Denver, Colo.† | 0.10 | 26 | 0.15 | 26 | 0.30 | 26 |
| Detroit, Mich. | 0.10 | 26 | 0.15 | 26 | 0.30 | 26 |
| Dodge City, Kans.† | 0.10 | 11 | 0.18 | 11 | 0.75 | 11 |
| Duluth, Minn.* | 0.02 | 4 | 0.03 | 4 | 0.11 | 4 |
| Eastport, Me.* | 0.25 | 18 | 0.33 | 18 | 1.07 | 13 |
| Galveston, Tex. | 0.20 | 12 | 0.25 | 12, 30 | 0.67 | 30 |
| Indianapolis, Ind. | 0.33 | 20 | 0.45 | 20 | 1.70 | 20 |
| Jacksonville, Fla. | 0.35 | 21 | 0.60 | 21 | 1.10 | 16 |
| Jupiter, Fla. | 0.20 | 11 | 0.35 | 11 | 1.05 | 11 |
| Kansas City, Mo. | 0.03 | 21 | 0.08 | 21 | 0.23 | 21 |
| Key West, Fla. | 0.30 | 30 | 0.40 | 30 | 0.60 | 30 |
| Marquette, Mich.* | 0.27 | 19 | 0.42 | 19 | 1.40 | 19 |
| Memphis, Tenn. | 0.09 | 14 | 0.12 | 14 | 0.67 | 14 |
| Milwaukee, Wis.† | 0.15 | 29 | 0.22 | 29 | 0.32 | 29 |
| New Orleans, La. | 0.25 | 24 | 0.35 | 24 | 1.45 | 24 |
| Norfolk, Va. | 0.12 | 15 | 0.15 | 15 | 0.26 | 15 |
| Omaha, Nebr. | 0.07 | 10 | 0.13 | 10 | 0.24 | 10 |
| Philadelphia, Pa. | 0.17 | 29 | 0.26 | 29 | 0.67 | 29 |
| Pittsburg, Pa. | 0.16 | 11 | 0.20 | 11 | 0.52 | 11 |
| Portland, Oregon | 0.03 | 23 | 0.06 | 23 | 0.21 | 23 |
| Saint Louis, Mo. | 0.02 | 6 | 0.03 | 6 | 0.13 | 6 |
| Salt Lake City, Utah | 0.07 | 6 | 0.08 | 6 | 0.25 | 6 |
| San Diego, Cal. | 0.12 | 20 | 0.15 | 20 | 0.30 | 20 |
| San Francisco, Cal. | 0.15 | 26, 29 | 0.30 | 29 | 0.61 | 29 |
| Savannah, Ga. | 0.09 | 20 | 0.10 | 20 | 0.15 | 20 |
| Tampa, Fla. | 0.11 | 20 | 0.12 | 20 | 0.14 | 20 |
| Washington, D. C. | | | | | | |
| Wilmington, N. C. | | | | | | |

* Record incomplete.

† Self-register out of order.

‡ Less than 0.05 in 1 hour.

The following tables show the number of years for which monthly precipitation to equal or exceed 10.00 inches, daily

precipitation to equal or exceed 2.50 inches, and hourly precipitation to equal or exceed 1.00 inch has been reported in the several states and territories for April during the last 23 years:

Excessive monthly precipitation.

| State. | No. years noted. | State. | No. years noted. |
|----------------|------------------|----------------------|------------------|
| Louisiana | 11 | Indian Territory | 1 |
| Mississippi | 11 | Massachusetts | 1 |
| Arkansas | 10 | Michigan | 1 |
| North Carolina | 8 | Nebraska | 1 |
| Alabama | 8 | New York | 1 |
| Tennessee | 7 | Pennsylvania | 1 |
| Texas | 6 | Vermont | 1 |
| Georgia | 5 | Wisconsin | 1 |
| Illinois | 4 | California | 1 |
| Indiana | 4 | Arizona | 1 |
| Kansas | 4 | Delaware | 1 |
| Virginia | 3 | District of Columbia | 1 |
| Kentucky | 3 | Idaho | 1 |
| Oregon | 3 | Iowa | 1 |
| Washington | 3 | Maine | 1 |
| Florida | 2 | Minnesota | 1 |
| Maryland | 2 | Montana | 1 |
| New Hampshire | 2 | Nevada | 1 |
| New Jersey | 2 | New Mexico | 1 |
| Ohio | 2 | Rhode Island | 1 |
| South Carolina | 2 | The Dakotas | 1 |
| Missouri | 2 | Utah | 1 |
| Colorado | 1 | West Virginia | 1 |
| Connecticut | 1 | Wyoming | 1 |

Excessive daily precipitation (24 hours).

| | | | |
|------------------|----|----------------------|---|
| Louisiana | 16 | Pennsylvania | 3 |
| Texas | 16 | Minnesota | 3 |
| Alabama | 15 | Oregon | 3 |
| Arkansas | 15 | Colorado | 3 |
| Georgia | 15 | Massachusetts | 2 |
| Tennessee | 15 | Vermont | 2 |
| Mississippi | 14 | Wisconsin | 2 |
| North Carolina | 14 | Ohio | 2 |
| Florida | 14 | Maine | 2 |
| Kansas | 11 | Michigan | 1 |
| The Dakotas | 10 | Montana | 1 |
| Illinois | 10 | New Jersey | 1 |
| Indian Territory | 9 | Rhode Island | 1 |
| Indiana | 9 | Wyoming | 1 |
| Kentucky | 7 | Washington | 1 |
| Missouri | 7 | Arizona | 1 |
| Iowa | 6 | Delaware | 1 |
| Nebraska | 6 | District of Columbia | 1 |
| California | 5 | Idaho | 1 |
| Virginia | 5 | Nevada | 1 |
| Maryland | 4 | New Hampshire | 1 |
| South Carolina | 4 | Utah | 1 |
| Connecticut | 3 | West Virginia | 1 |
| New York | 3 | | |

Excessive hourly precipitation.

| | | | |
|------------------|----|----------------------|---|
| Texas | 12 | California | 0 |
| Arkansas | 6 | Colorado | 0 |
| Florida | 5 | Connecticut | 0 |
| Illinois | 5 | Delaware | 0 |
| Kansas | 4 | District of Columbia | 0 |
| Tennessee | 4 | Idaho | 0 |
| Iowa | 4 | Indiana | 0 |
| North Carolina | 4 | Kentucky | 0 |
| Louisiana | 4 | Maine | 0 |
| Alabama | 3 | Massachusetts | 0 |
| Georgia | 3 | Minnesota | 0 |
| Mississippi | 3 | Montana | 0 |
| Missouri | 3 | Nevada | 0 |
| South Carolina | 2 | New Hampshire | 0 |
| The Dakotas | 2 | New York | 0 |
| Nebraska | 2 | Oregon | 0 |
| Indian Territory | 1 | Rhode Island | 0 |
| Maryland | 1 | Utah | 0 |
| Michigan | 1 | Vermont | 0 |
| New Jersey | 1 | Virginia | 0 |
| New Mexico | 1 | Washington | 0 |
| Ohio | 1 | West Virginia | 0 |
| Pennsylvania | 1 | Wisconsin | 0 |
| Arizona | 0 | Wyoming | 0 |

The following tables give exceptionally heavy monthly, daily, and hourly precipitation reported for April during the last 23 years:

Monthly.

| Station and state. | Am't. | Year. | Station and state. | Am't. | Year. |
|--------------------|-------|-------|-------------------------|-------|-------|
| Summit, Cal | 30.40 | 1880 | Mount Washington, N. H. | 23.41 | 1878 |
| Jackson, Miss | 23.80 | 1874 | Newport, Ark. | 21.20 | 1886 |
| Faulding, Miss | 23.60 | 1871 | Brookhaven, Miss | 20.35 | 1876 |

Daily (24 hours).

| Station and state. | Amount. | Date. | Station and state. | Amount. | Date. |
|------------------------|---------|-------------|------------------------|---------|-------------|
| Terrell, Tex | 18.00 | 22-24, 1879 | New Haven, Conn. | 5.90 | 3-4, 1876 |
| Mount St. Helena, Cal | 14.70 | 20-21, 1880 | Helena, Ark. b | 5.89 | 13-14, 1893 |
| Point Pleasant, La | 12.28 | 5, 1885 | Baltimore, Md. | 5.82 | 25-26, 1889 |
| Fort Smith, Ark. | 11.00 | 23, 1879 | Kosciusko, Miss | 5.80 | 6, 1892 |
| Vaiden, Miss. | 9.92 | 4-6, 1892 | Columbia, La | 5.75 | 3, 1890 |
| Healdsburg, Cal | 9.73 | 20-21, 1880 | Tallahassee, Fla. | 5.70 | 19-20, 1893 |
| Bay Saint Louis, Miss | 9.60 | 21-22, 1892 | Saint Marys, Ga. | 5.70 | 2-3, 1876 |
| New Orleans, La. | 9.22 | 7-8, 1883 | Jasper, Ga. | 5.69 | 5-6, 1892 |
| Fayette, Miss. | 9.00 | 15-16, 1880 | Adamsville, Ga. | 5.63 | 5-6, 1892 |
| Florence, Ala. | 8.71 | 5-7, 1892 | Colorado, Tex. | 5.60 | 23, 1890 |
| Sugar Ex. Station, La. | 8.12 | 21-22, 1892 | Diamond, Ga. | 5.58 | 6, 1892 |
| Gallinas, Tex. | 8.12 | 20-21, 1891 | Scottsboro, Ala. | 5.55 | 5, 1892 |
| Melissa, Tex. | 8.00 | 22-23, 1879 | Kendall Green, D. C. | 5.54 | 25-26, 1889 |
| Palo Alto, Miss. | 7.81 | 6-7, 1892 | Rome, Ga. | 5.54 | 5-6, 1892 |
| Austin, Mo. | 7.50 | 8-9, 1891 | Corinth, Miss. | 5.53 | 13-14, 1893 |
| New Orleans, La. | 7.49 | 21-22, 1892 | New Orleans, La. | 5.51 | 7, 1876 |
| Ship Island, Miss. | 7.48 | 21-22, 1892 | Abingdon, Ill. | 5.50 | 13, 1876 |
| Brookhaven, Miss | 7.45 | 17-19, 1874 | Clarksville, Tex. | 5.50 | 22-23, 1879 |
| Gadsden, Ala. | 7.43 | 5-7, 1892 | Chattahoochee Ldg, Fla | 5.50 | 19-20, 1893 |
| Point Pleasant, La. | 7.35 | 6-7, 1883 | Thomasville, Ga. | 5.50 | 19-20, 1893 |
| Santa Maria, Tex. | 7.34 | 19-20, 1888 | Dixon, Mo. | 5.50 | 20, 1893 |
| Mobile, Ala. | 7.30 | 19, 1888 | Washington B'ks, D. C. | 5.45 | 24-25, 1889 |
| Helena, Ark. a | 7.05 | 12-14, 1893 | Florence, Ala. b. | 5.45 | 12, 1893 |
| Modesto, Cal. | 7.00 | 20-21, 1880 | Maurepas, La. | 5.42 | 22, 1892 |
| Jordans Grove, Ill. | 7.00 | 3-4, 1892 | Gainesville, Tex. | 5.40 | 24, 1890 |
| Pana, Ill. | 7.00 | 3-4, 1892 | Columbus, Miss. a. | 5.40 | 6-7, 1892 |
| Shell Beach, La. | 7.00 | 21, 1890 | Moseley Hall, Fla. | 5.38 | 19-20, 1893 |
| Valley Head, Ala. | 6.89 | 5-6, 1892 | Mobile, Ala. | 5.34 | 24, 1881 |
| Helena, Ark. | 6.85 | 22-23, 1879 | Fort Myer, Va. | 5.30 | 25-27, 1889 |
| Tuscumbia, Ala. a | 6.84 | 4-5, 1892 | Sacramento, Cal. | 5.28 | 20, 1880 |
| West End, La. | 6.80 | 21-22, 1892 | Glensted, Mo. | 5.20 | 18-19, 1893 |
| Marengo, Ind. | 6.77 | 22, 1887 | Nevada City, Cal. | 5.20 | 21, 1880 |
| Wallace, La. | 6.75 | 21, 1892 | Gallinas, Tex. | 5.20 | 17, 1891 |
| Hat Creek, Wyo | 6.74 | 21-23, 1879 | Norfolk, Va. | 5.19 | 16-17, 1883 |
| Santa Rosa, Cal | 6.70 | 20-21, 1880 | Saint Marks, Fla. | 5.15 | 14-15, 1879 |
| Eight Mile, Mo. | 6.68 | 18-19, 1893 | Pana, Ill. | 5.13 | 3-4, 1893 |
| Emilie, La. | 6.62 | 21-22, 1892 | Breckenridge, Minn. | 5.12 | 10-11, 1878 |
| Amite, La. | 6.57 | 22-23, 1890 | Homer, La. | 5.12 | 14, 1893 |
| Foust City, Cal. | 6.54 | 20-21, 1880 | New Ulm, Tex. | 5.12 | 23-24, 1879 |
| Fort Sill, Okla. T. | 6.46 | 21-22, 1879 | Rolla, Mo. | 5.10 | 29-30, 1893 |
| Corsicana, Tex. | 6.31 | 22, 1879 | Quitman, Ga. b. | 5.10 | 19-20, 1893 |
| Covington, Ga. | 6.30 | 23, 1883 | Charleston, S. C. | 5.09 | 16-17, 1879 |
| Fayetteville, N. C. | 6.25 | 27-28, 1879 | Nashville, Tenn. | 5.04 | 21-22, 1883 |
| Marksville, La. | 6.25 | 22, 1890 | Elk Falls, Kans. | 5.04 | 20, 1885 |
| Dardanelle, Ark. | 6.20 | 15-16, 1890 | Tamales, Cal. | 5.02 | 20-21, 1880 |
| Charleston, Ill. | 6.12 | 3-4, 1892 | Grainfield, Kans. | 5.00 | 27, 1888 |
| Savannah, Ga. | 6.11 | 16-17, 1879 | Dallas, Tex. | 5.00 | 27, 1888 |
| Piscola, Ga. | 6.10 | 19-20, 1893 | Melissa, Tex. | 5.00 | 17, 1877 |
| Bristol, Fla. | 6.03 | 19-20, 1893 | Weatherford, Tex. | 5.00 | 27-28, 1888 |
| Point Pleasant, La. | 6.02 | 2, 1885 | Newport, Ark. | 5.00 | 17, 1886 |
| Hammond, La. | 5.98 | 21-22, 1892 | Lonoke, Ark. | 5.00 | 3, 1890 |
| Montgomery, Ala. | 5.97 | 2, 1876 | Fort McHenry, Md. | 5.00 | 23-26, 1889 |
| Healdton, Ind. T. | 5.97 | 28, 1892 | Fayetteville, Ark. | 5.00 | 29-30, 1893 |
| Baton Rouge, La. | 5.97 | 21-22, 1892 | Marengo, Ind. | 5.00 | 11, 1893 |
| Julian, Cal. | 5.92 | 1-2, 1892 | | | |

One hour and less.

| Station and state. | Amount. | Time. | Date. |
|--------------------------------|---------|-------|----------|
| Philadelphia, Pa. | Inches. | h. m. | |
| Memphis, Tenn. | 0.45 | 0 05 | 16, 1891 |
| Jupiter, Fla. | 0.35 | 0 05 | 15, 1891 |
| Jacksonville, Fla. | 0.35 | 0 05 | 21, 1893 |
| Memphis, Tenn. | 0.33 | 0 05 | 20, 1893 |
| Do | 0.30 | 0 05 | 30, 1893 |
| Atlanta, Ga. | 0.30 | 0 05 | 20, 1892 |
| New Orleans, La. | 0.30 | 0 05 | 7, 1892 |
| Indianapolis, Ind. | 0.27 | 0 05 | 19, 1893 |
| Buffalo, N. Y. | 0.27 | 0 05 | 28, 1892 |
| Kansas City, Mo. | 0.25 | 0 05 | 9, 1890 |
| Galveston, Tex. | 0.25 | 0 05 | 17, 1892 |
| New Orleans, La. | 0.25 | 0 05 | 18, 1893 |
| Dodge City, Kans. | 0.25 | 0 05 | 17, 1890 |
| Omaha, Neb. | 0.25 | 0 05 | 15, 1891 |
| Water Works, Philadelphia, Pa. | 0.25 | 0 05 | 24, 1893 |
| Adrian, Mich. | 0.25 | 0 05 | 16, 1891 |
| Philadelphia, Pa. | 0.25 | 0 05 | 15, 1891 |
| Jupiter, Fla. | 0.25 | 0 05 | 16, 1893 |
| Memphis, Tenn. | 0.55 | 0 10 | 15, 1891 |
| New Orleans, La. | 0.53 | 0 10 | 17, 1890 |
| Water Works, Philadelphia, Pa. | 0.50 | 0 10 | 16, 1891 |
| Egg Harbor City, N. J. | 1.50 | 0 15 | 27, 1890 |
| Jacksonville, Fla. | 1.50 | 0 20 | 23, 1883 |
| Denmark, Iowa. | 1.00 | 0 20 | 24, 1880 |
| Titusville, Fla. | 1.78 | 0 25 | 19, 1888 |
| Cabaniss, Ga. | 2.00 | 0 30 | 1, 1874 |
| Denmark, Iowa. | 1.87 | 0 30 | 8, 1882 |
| Little Rock, Ark. | 1.50 | 0 30 | 6, 1882 |
| Black Rock, Ark. | 3.42 | 0 40 | 20, 1892 |
| Pilot Point, Tex. | 3.00 | 0 45 | 28, 1879 |
| Lozier, Tex. | 3.50 | 1 00 | 11, 1891 |

* Estimated.

SNOW.

On the 7th a heavy snowstorm prevailed over central New

York and extended thence over parts of New England during the evening. The Northwestern States were visited by a severe storm of wind and snow on the 11th and 12th. At Bismarck, N. Dak., heavy snow began 7 p. m., 11th, and continued through the 12th. During the 12th and 13th the snowstorm extended to Illinois and Indiana, and the morning of the 14th reached New York. An exceptionally heavy snowstorm visited Minnesota and northern Iowa on the 19th and 20th; 9 to 15 inches of snow fell in parts of Minnesota. Heavy snow fell in the Cascade Mountains, Washington, on the 20th and 21st. On the 27th and 28th heavy snow was reported in northern Iowa. On the 29th and 30th 6 to 12 inches of snow fell in Millard, Beaver, and Iron counties, Utah, causing the loss of many sheep.

MONTHLY SNOWFALL (in inches and tenths).

Chart V shows the depth of snowfall reported for the month.

The greatest depth of snowfall reported was 124, at Pikes Peak, Colo. A depth of 92 was noted at Summit, Cal.; 76 at Climax, Colo.; 49 at Saint Cloud, Minn.; and 34 at Beaver, Utah. In central Minnesota, the middle Rocky and middle and northern Sierra Nevada Mountains, and at points in the middle plateau region, western South Dakota, north-central Nebraska, northeastern Iowa, extreme northern Wisconsin, and northwestern Massachusetts, the monthly snowfall exceeded 20. More than 10 fell over large areas in the interior of New England and New York, from northern and western Wisconsin and Upper Michigan to the eastern Dakotas, from western South Dakota and northwestern Nebraska over the middle and northern Rocky Mountains, in eastern Nevada and southwestern Utah, and in an area covering northeastern California and southwestern Oregon.

The southern limit of snow is shown by a line traced southward over the Alleghany Mountains to extreme western North Carolina, thence to central and western Kentucky and northern Arkansas, thence to extreme north-central Kansas, thence to central New Mexico, and thence to the Sierra Nevada Mountains.

DEPTH OF SNOW ON GROUND ON THE 15TH AND AT THE CLOSE OF THE MONTH.

At points in the interior of northern New England and northern New York 5 to 10 was reported on the ground on the 15th. A slight depth was noted in the northern Ohio valley, the lower lake region, and Lower Michigan. In western Upper Michigan the depth varied from 6 to 12. Northern Minnesota and North Dakota reported trace to 6. Snowfall varying from 30 to 50 was reported at points in the middle and northern Rocky Mountains.

At the close of the month trace to 4 was reported at points in northern New England, and snow was reported at scattered points from Lake Superior to the middle and northern Rocky Mountains. In the mountains of Colorado a depth of 30 to 50 was noted at the close of the month.

Monthly snowfall of 5 inches, or more, was reported as follows, and in states and territories where the maximum depth was below that amount, the station reporting the greatest is given:

Arkansas.—Kirby, trace. *California*.—Summit, 92; Emigrant Gap, 56; Cisco, 47; Towles, 38; Truckee, 33; Boca, 16; Fort Bidwell, 15.5; Edgwood, 8.5; Nevada City, 7; Lick Observatory, 6.5; Shasta, 5.5. *Colorado*.—Pikes Peak, 124.1; Climax, 76; Breckenridge, 63.6; Steamboat Spring, 32; Red Cliff, 31.7; Ward District, 29.6; Gold Hill, 21.8; Saint Cloud, 21; Stamford, 19.5; Scissors, 18.5; Box Elder and Smoky Hill Mine, 18; Moraine and Pagoda (near), 15; Alma, 14; Greenhorn, 12; Sunnyside, 10.7; Rico, 10.3; Hugo (near), 10; Denver, 9.9; Como (near), 9.7; Castle Rock and Laverder, 9; Cumbres, 8; Collbran, 7.4; Grover, 7; Colorado Springs and Glen Eyrie, 6; McCoy, 5.

Connecticut.—South Manchester, 10; Canton, 9.5; New Hartford (a), 9.5; Hartford (b), 8.5; Falls Village and West Simsbury, 8; Southington, 7.5; North Grosvenor Dale and Storrs, 7; Colchester, Voluntown, and Waterbury, 6; Middletown, 5.5; North Franklin and Stevenson, 5. *Idaho*.—Bonanza City, 11; Lake, 6. *Illinois*.—East Peoria, 6. *Indiana*.—Farmland, 7; Columbia City, 6. *Iowa*.—Osage, 22; Storm Lake, 11.1; Algona, 11; Eagle Grove, 10.1; Denison and Vinton, 10; Larrabee, 9; Hampton, 8.5; Charles City and Cresco, 8; Hawkeye, 7.5; Grand Meadow, 7.1; Alta (a), Emmetsburg, and Grundy Center, 7; Ames (near), Centerville, Newton, and Richland, 6; Audubon, 5.6; Belle Plaine and Iowa Falls, 5. *Kansas*.—Monument and Oberlin, 1. *Kentucky*.—Hendricks, 0.1. *Maine*.—Houlton, 13.8; Farmington and Mayfield, 12; Kents Hill, 11.5; Easton, 11; Calais, 10.2; Eastport, 9.3; East Machias, 8.5; Bar Harbor, Belfast, Cornish, Gardiner, and Mattawamkeag, 8; Lewisburg, 7.2; Fairfield, 5.

Maryland.—Sunnyside, 3.5. *Massachusetts*.—Monroe, 21; Groton (a), 10.5; Mansfield and Williamstown, 10; Taunton (a), 9.1; Dudley, Somerset, Springfield Armory, and Westboro, 9; Leeds, 8.5; Lynn (a), Middleboro, Monson, Plymouth, Turners Falls, Webster, and Worcester (b), 8; Boston, 7.9; Blue Hill (summit), Ludlow Center, and Royalston, 7.5; Amherst Experiment Station, Leominster, and Winthrop, 7; Taunton (b), 6.8; Concord (a), Fitchburg (b), Provincetown, and Salem (b), 6.5; Beverly Farms, Fitchburg (a), Kendall Green, Randolph, and South Dennis, 6; Bedford, Chestnut Hill, and North Billerica, 5.5; Fall River (a), Lawrence, Milton, Mystic Lake, Mystic Station, Newburyport (b), Wakefield, and Wayland, 5.

Michigan.—Marquette, 18.8; Lathrop, 16.8; Calumet, 13; Escanaba, 8.5; Grayling, 7.5; Berrien Springs (a), 6; Sault Ste. Marie, 5.1; Berlin, 5. *Minnesota*.—Saint Cloud, 49; Long Prairie, 44; Park Rapids, 34.3; Morris, 32; Camden and Fort Ripley, 31; Alexandria (b) and Cambridge, 28; Maple Plain, 25.1; Alexandria (a) and Bird Island, 25; Collegeville, 24; Leech Lake, 23.5; Pine River, 22.5; Lake Winnibigoshish, 21.7; Sandy Lake Dam, 21; Saint Oloff, 20.5; Rolling Green and Willmar, 20; Saint Charles and Saint Vincent, 19; Pokegama Falls, 18.8; Montevideo, 18.5; Duluth and Wabasha, 18; Kinbrae, 16.8; Caledonia, 16.5; Fergus Falls, 15.6; Saint Paul, 15; Moorhead, Ortonville, and Rochester, 14; Alma, 13.2; Minneapolis and Winona, 13; Farmington, 12.5; Blooming Prairie, 12; Red Wing, 11.9; Sheldon, 10.8; Albert Lea, Grand Meadow, Minnesota City, and Redwood Falls, 10.

Missouri.—Centerville, 6. *Montana*.—Corbin, 22.4; Virginia City, 22; Deer Lodge City, 10.2; Fort Missoula, 10; Havre, 9.8; Dry Forks, 8.5; Columbia Falls, 6.5. *Nebraska*.—Whitman, 22; Kennedy, 20; Hartington, 14.5; Harrison, 14; Valentine, 13.5; Fort Robinson, 12.6; Hayes Center, 11.5; Springview, 9.5; Gering, 7.5; Kimball, 6.5; West Point, 6; Fort Sidney, 5.2. *Nevada*.—Austin, 26.5; Stofiel, 21; Ely, 15; Virginia City, 14.8; Tuscarora, 13; Lewers Ranch, 12.6; Empire Ranch and South Camp, 12; Halleck and Verdi, 10; Palisade, 9.5; Humboldt, 9; Toano and Wells, 8.5; Genoa, 8; Carson City, 7.2; Beowawe and Cranes Ranch, 7; Belmont, 6.5; Winnemucca, 6.4; Tybo, 6; Hot Springs, 5.7; Fenelon, 5.5.

New Hampshire.—Berlin Mills, 16.5; North Conway and Bethlehem, 12; Lancaster, 11.6; Littleton and Plymouth, 9.5; Stratford, 9; Hanover (a) and Nashua, 7; Brookline and East Canterbury, 6; Manchester, 5.5; Concord (a), Dublin, and Grafton, 5. *New Jersey*.—Deckerton, 3.8. *New Mexico*.—Folsom, 5. *New York*.—Lebanon Springs, 21; Turin, 18.2; Number Four, 16.7; Malone and Palermo, 15.2; Lowville, 15; Ampersand, 14.5; Le Roy, 14; Constableville, 13; Arcade, Plattsburg Barracks, and Victor, 12.5; Carthage, 11.5; Eden Center, 11; South Kortright, 10.8; Oxford, 10.5; Romulus,

10.4; Fleming, Humphrey, and Potsdam, 10; Rochester and South Canisteo, 9.6; Lyons, 9.5; Canton, 9.3; Utica, 9; Gloversville, 8.6; Geneva, 8.2; Brookfield, Cooperstown, Lockport, New Lisbon, North Hammond, Rondout, and Varysburg, 8; Madison Barracks, 7.8; Wappinger Falls, 7.5; Buffalo, 7.3; Wedgwood, 6.5; Honeyhead Brook, 6.2; Middletown and West Point, 6; Watkins, 5.

North Carolina.—Blowing Rock and Highlands, trace. *North Dakota*.—Milton, 17; Grand Forks, 16.2; Reynolds, 14.5; Jamestown, 14.4; Berlin and Ellendale, 13; Napoleon, 12.7; Grafton and Saint Johns, 12; Kelso, 9.5; Gallatin, 8.2; Minto, 7.5; Forman, 7; Woodbridge, 6.1; Lakota, Oakdale, and Wahpeton, 6. *Ohio*.—Mansfield, 7.2; Wheeler, 7; Hillhouse, 6.5; Garrettsville and Strongsville, 6; Bellevue, Benton Ridge, Levering, Napoleon, North Royalton, Ridgeville Corners, Shenandoah, and Vermillion, 5. *Oregon*.—Siskiyou, 47; Baker City, 8.2. *Pennsylvania*.—Erie, 7.5; Salem Corners, 7.3; Le Roy, 7; Blue Knob, 6. *Rhode Island*.—Kingston (b), Pawtucket, and Providence (a), 8; Lonsdale, 6.5; Bristol, 5.

South Dakota.—Spearfish, 29; Rosebud, 24; Gary, 22.5; Flandreau, 21.2; Oelrichs, 21; Aberdeen, 15.5; Webster, 14.6; Bear Valley, 11.5; Sioux Falls, 11; Cross, 10.5; Britton and Parker, 10; Kimball, 9; Bowdle and Salem, 8.5; Fort Meade, 8.4; Wentworth, 7.5; Hotch City, Plankinton, and Wolsey, 7; De Smet, Frankfort, Gale, and Wessington Springs, 5. *Texas*.—Ochiltree, 2. *Utah*.—Beaver, 34; Parowan, 13.5; Salt Lake City, 8; Grouse Creek, 7.8; Randolph, 7.5; Logan, 7.3; Mount Carmel, 7; Heber, 5.2. *Vermont*.—Jacksonville, 15.9; Chelsea and Strafford, 14; Hyde Park, 10.5; Irasburg and South Royalton, 10; Enosburg Falls, 9.5; Northfield, 9.3; Burlington, 9; Hartland, 8.5; Woodstock, 6.5; Cornwall, Norwich, and Wells, 6. *Virginia*.—Wytheville, 0.2. *Washington*.—Ellensburg, 9; Elbe, 6.5; Waterville, 6; Rosalia, 5.5; Chelan, 5.

West Virginia.—Davis, 3. *Wisconsin*.—Bayfield, 26; Florence, 22.5; Grantsburg, 20; Barron, 19; Hayward, 16; Menomonie, 15.3; Ashland, 15; Viroqua and Weston, 14.5; Sparta (b), 13.2; Chippewa Falls and Medford (a), 13; Hammond and Pepin, 12; Butternut and Koepenick, 11; La Crosse, 10.8; Amherst, 10; Hillsboro and Shell Lake, 9.5; Osceola, 9.3; Oconto, 9; Medford (b), 8.5; Mineral Point and Valley Junction, 8; Hudson, 7; Shawano, 6.5; Belleville and Westfield, 6; Black River Falls, 5.5; Lancaster and Reedsburg, 5. *Wyoming*.—Lander, 21.4; Fort Washakie, 20.6; Saratoga, 20; Sundance, 14.5; Camp Pilot Butte, 13.5; Cheyenne, 13.4; Fort Yellowstone, 9.8; Big Horn Ranch and Fort Washakie, 6.8; Sheridan, 5.5.

HAIL.

Description of the more severe hailstorms reported for the month are given under "Local storms."

Hail was reported as follows: 1st, Connecticut. 3d, Illinois, Indiana, Iowa, Kansas, Kentucky, Michigan, Missouri, New York, Ohio, Tennessee, Washington, and Wisconsin. 4th, Alabama, Georgia, Kentucky, New York, Tennessee, Virginia, and Wisconsin. 5th, Alabama, California, Indiana, Kentucky, Massachusetts, Missouri, and Tennessee. 6th, California, Illinois, Iowa, Michigan, Minnesota, Missouri, North Carolina, Ohio, Oklahoma, Oregon, South Carolina, and Wisconsin. 7th, California, Illinois, Indiana, Maryland, Massachusetts, Michigan, Minnesota, Missouri, New Hampshire, New Jersey, New York, Ohio, Oklahoma, Oregon, Pennsylvania, Vermont, Washington, and Wisconsin. 8th, Connecticut, Illinois, Indiana, Maine, Massachusetts, Missouri, New Hampshire, New York, Ohio, Pennsylvania, and Vermont.

9th, California, Indian Territory, Kansas, Missouri, Ohio, Oklahoma, and Washington. 10th, Arkansas, Kentucky, Missouri, New Jersey, Oklahoma, Oregon, Pennsylvania,

Texas, Utah, and Washington. 11th, Arkansas, Illinois, Indiana, Iowa, Kansas, Kentucky, Minnesota, Missouri, Nebraska, Oklahoma, South Dakota, Texas, and Wisconsin. 12th, Arkansas, California, Colorado, Illinois, Indiana, Iowa, Kansas, Kentucky, Michigan, Mississippi, Missouri, Tennessee, Texas, Washington, and Wisconsin. 13th, Alabama, Arkansas, Indiana, Indian Territory, Maine, Mississippi, Missouri, Nebraska, Oregon, Tennessee, Texas, and West Virginia.

14th, Arkansas, Louisiana, Mississippi, Missouri, New Hampshire, New York, Ohio, Texas, and Washington. 15th, Indiana, Massachusetts, Mississippi, Missouri, New York, North Dakota, Pennsylvania, and South Dakota. 16th, Florida, Illinois, Michigan, North Carolina, Ohio, Washington, and Wisconsin. 17th, Maryland, Oklahoma, Pennsylvania, and Washington. 18th, Arkansas, Illinois, Kansas, Minnesota, Missouri, Nebraska, and Texas. 19th, Alabama, Arkansas, Florida, Georgia, Illinois, Kansas, Kentucky, Louisiana, Mississippi, Missouri, Oklahoma, Texas, Washington, and West Virginia. 20th, Connecticut, Florida, Georgia, Illinois, Indiana, Kentucky, Maryland, Massachusetts, Michigan, Missouri, Nebraska, New York, Oklahoma, Pennsylvania, Texas, Virginia, and West Virginia.

21st, Florida, Illinois, Kansas, Maine, Missouri, New Hampshire, New York, Tennessee, Virginia, and West Virginia. 22d, Alabama, California, Illinois, Maryland, Massachusetts, Nevada, New Hampshire, New York, and Vermont. 23d, Connecticut, Florida, Kansas, Massachusetts, Missouri, New Hampshire, New Jersey, New York, Oklahoma, Texas, and Utah. 24th, Illinois, Indiana, Iowa, Kansas, Missouri, Nebraska, Ohio, Tennessee, and Wisconsin. 25th, Arkansas, Colorado, Illinois, Indiana, Iowa, Kansas, Kentucky, Missouri, Nebraska, Ohio, Oklahoma, Oregon, South Dakota, Tennessee, Texas, and West Virginia. 26th, Arkansas, Georgia, Idaho, Illinois, Indiana, Iowa, Louisiana, Michigan, Mississippi, Missouri, Nebraska, New Jersey, New York, North Dakota, Tennessee, Texas, Washington, and Wisconsin.

27th, Alabama, California, Georgia, Idaho, Louisiana, Maine, Massachusetts, Michigan, Missouri, North Carolina, Oregon, and Vermont. 28th, Alabama, Arkansas, California, Florida, Georgia, Illinois, Indiana, Iowa, Kansas, Mississippi, Missouri, Ohio, Oklahoma, and Texas. 29th, Alabama, Arkansas, Florida, Illinois, Indiana, Kansas, Kentucky, Maryland, Missouri, North Carolina, Ohio, Oklahoma, South Carolina, Texas, Utah, Virginia, and West Virginia. 30th, Arkansas, Illinois, Kansas, Louisiana, Mississippi, Missouri, North Carolina, Ohio, Pennsylvania, Texas, and West Virginia.

SLEET.

Description of the more severe sleetstorms reported for the month is given under "Local storms."

Sleet was reported as follows: 1st, Maine and Vermont. 3d, Iowa. 4th, Maine. 5th, Minnesota, Nevada, and Wisconsin. 6th, Idaho, Minnesota, Nevada, North Carolina, North Dakota, and Wisconsin. 7th, Maine, Massachusetts, Michigan, Minnesota, New Jersey, New York, North Carolina, North Dakota, Pennsylvania, Vermont, and Washington. 8th, Maine, Nevada, and New Hampshire. 9th, Nevada. 10th, California, Nevada, and New York. 11th, Colorado, Nevada, North Dakota, South Dakota, and Wisconsin. 12th, California, Minnesota, Nevada, North Dakota, Pennsylvania, South Dakota, and Wisconsin.

13th, Colorado, Iowa, Maine, Minnesota, Missouri, New Mexico, and Texas. 14th, Arkansas, Illinois, Indiana, Kentucky, Massachusetts, Missouri, New York, Ohio, and Oklahoma. 15th, Maine, Massachusetts, Michigan, Montana, New York, North Carolina, North Dakota, Ohio, Pennsylvania, and Vermont. 16th, Illinois, Michigan, North Carolina, South Dakota, and Wisconsin. 17th, North Dakota. 18th,

Colorado, Kansas, Maine, Nebraska, and Utah. 19th, Illinois, Iowa, Minnesota, Montana, Nebraska, and Wisconsin. 20th, Connecticut, Illinois, Indiana, Iowa, Kansas, Kentucky, Massachusetts, Michigan, Minnesota, Missouri, Nebraska, New Hampshire, New York, Pennsylvania, South Dakota, Vermont, and Wisconsin.

21st, Illinois, Indiana, Iowa, Maine, Massachusetts, Michigan, Missouri, New Hampshire, North Dakota, Ohio, Tennessee, Vermont, and Wisconsin. 22d, Indiana, Iowa, Massachusetts, Michigan, New York, Ohio, Vermont, and West

Virginia. 23d, Colorado, Montana, New York, and Ohio. 24th, Minnesota and Nevada. 25th, Colorado, Maine, Nebraska, Nevada, North Dakota, South Dakota, Vermont, and Wisconsin. 26th, Colorado, Iowa, Michigan, Minnesota, Montana, Nebraska, South Dakota, Utah, and Wisconsin. 27th, Michigan, Minnesota, and Wisconsin. 28th, Iowa, Maine, Michigan, Nevada, Utah, and Wisconsin. 29th, Colorado, Iowa, Kansas, Nebraska, Utah, and Wisconsin. 30th, Colorado, Indiana, Iowa, Kansas, Minnesota, Nebraska, and Wisconsin.

WINDS.

The prevailing winds in April, 1893, are shown on Chart II by arrows flying with the wind. In New England, on the northeast slope of the Rocky Mountains, over the southern plateau region, and along the middle Pacific coast the winds were generally from southwest to northwest; in the middle Atlantic states, the Ohio Valley and Tennessee, and over the middle and northern plateau regions, from southeast to southwest; in the south Atlantic and east Gulf states, on the southeast slope of the Rocky Mountains, and along the north Pacific coast, from south to west; over the Florida Peninsula and in the west Gulf states, from east to south; in the upper lake region, from northeast to southeast; in the extreme northwest, from northwest to north; in the Missouri Valley, from northwest to northeast; along the south Pacific coast, from west to northwest; and in the lower lake region, the upper Mississippi valley, and on the middle-eastern slope of the Rocky Mountains, variable.

HIGH WINDS (in miles per hour).

Wind velocities of 50 miles, or more, per hour were reported at regular stations of the Weather Bureau as follows: 2d, 56, sw., at Winnemucca, Nev. 3d, 72, s., at Fort Canby, Wash. 4th, 50, sw., at Detroit, Mich. 5th, 50, sw., at Winnemucca, Nev. 6th, 60, sw., at Salt Lake City, Utah; 58, sw., at Amarillo, Tex., Colorado Springs, Colo., and Winnemucca, Nev.; 52, sw., at Pueblo, Colo.; 51, sw., at Dodge City, Kans.; 50, w., at Fort Stanton, N. Mex.; 50, se., at Keeler, Cal. 7th, 63, sw., at Rapid City, S. Dak.; 60, w., at Pierre, S. Dak.; 60, nw., at Huron, S. Dak.; 59, se., at Erie, Pa.; 54, sw., at Lexington, Ky., and Amarillo, Tex.; 54, w., at North Platte, Nebr.; 52, sw., at Detroit, Mich.; 52, w., at Valentine, Nebr.; 50, w., at Cheyenne, Wyo.

11th, 66, w., at Amarillo, Tex.; 60, sw., at Hannibal, Mo.; 58, sw., at Dodge City, Kans.; 56, nw., at Kearney, Nebr.; 53, sw., at Wichita, Kans.; 52, nw., at Colorado Springs, Colo.; 50, nw., at El Paso, Tex. 12th, 58, se., at Chicago, Ill.; 54, sw., at Saint Louis, Mo.; 54, w., at Huron, S. Dak.; 52, sw., at Detroit, Mich., and Hannibal, Mo.; 50, sw., at Davenport, Iowa, and Red Wing, Minn.; 50, n., at Saint Vincent, Minn. 13th, 68, s., at Fort Canby, Wash.; 60, sw., at Detroit and Port Huron, Mich. 14th, 54, nw., at Galveston, Tex. 18th, 50, n., at Amarillo, Tex. 19th, 62, e., at Chicago, Ill.; 60, n., at Amarillo, Tex., and Kearney, Nebr.; 53, n., at Wichita, Kans.; 50, n., at Dodge City, Kans.

20th, 72, ne., at Detroit, Mich., and Chicago, Ill.; 66, s., at Charleston, S. C.; 60, se., at Block Island, R. I., and Sault Ste. Marie, Mich.; 60, w., at Lexington, Ky.; 57, w., at Pensacola, Fla.; 56, nw., at Kearney, Nebr.; 54, se., at Oswego, N. Y.; 54, nw., at Sioux City, Iowa; 53, s., at Fort Canby, Wash.; 52, se., at Erie, Pa.; 52, sw., at Port Huron, Mich.; 52, w., at Saint Louis, Mo.; 51, w., at Columbus, Ohio; 50, se., at Cleveland, Ohio; 50, ne., at Cheboygan, Mich.; 50, nw., at Leavenworth, Kans., Springfield, Mo., and Huron, S. Dak. 21st, 60, se., at Block Island, R. I.; 54, sw., at Nantucket, Mass.; 50, sw., at Chicago, Ill. 22d, 50, s., at Fort

Canby, Wash. 23d, 56, se., at Huron, S. Dak. 24th, 51, n., at Colorado Springs, Colo. 26th, 54, se., at Erie, Pa.; 52, sw., at Chicago, Ill. 27th, 54, sw., at Chicago, Ill. 30th, 53, ne., at Chicago, Ill.

LOCAL STORMS.

(75th meridian time is used at regular Weather Bureau stations.)

3d.—Near Fall Creek, Pittsylvania County, Va., 2 boys were killed by lightning. At Parkersburg, W. Va., a thunderstorm, with high southwest wind, occurred about 11 p. m., causing damage of a minor character. A destructive thunderstorm was reported at Berrien Springs, Mich. At Grand Haven, Mich., a heavy thunderstorm began in the early morning and continued until 10 a. m.; a flagstaff was struck by lightning. A thunder, rain, and hail storm moved northeast over Powhattan, Kans., about 4 p. m. In the afternoon a westerly gale caused some damage about Fort Buford, N. Dak.

4th.—A house was struck by lightning at Portland, Me. High wind the night of the 4-5th caused some damage at Albany, N. Y. Westerly gales interrupted traffic on the Straits at Sault Ste. Marie, Mich., and caused considerable damage to telegraph lines, etc. Damage by lightning was reported at Benzonia, Mich.

5th.—In the afternoon at Knoxville, Tenn., a house was struck and a boy killed by lightning.

6th.—At Chicago, Ill., a temporary hotel, valued at \$5,000, located near the World's Columbian Exposition, was blown down. The night of the 6th a thunderstorm caused considerable damage at North Marshall, Mich. Severe thunderstorms occurred in Jefferson, Racine, and Waukesha counties, Wis. In the afternoon a house in Saint Paul, Minn., was struck by lightning. At Denver Colo., a heavy windstorm prevailed in the afternoon and evening; telegraph lines were blown down, and one person was killed by a falling cornice. A southwest gale prevailed at Salt Lake City, Utah, and about 1.20 p. m. the wind reached a velocity of 60 miles per hour, the highest velocity on record at that station. Rain fell from 11.15 to 11.25 a. m. At 2.20 p. m. rain began and changed to snow, and snow ended 4 p. m. From 10 a. m. to 12.30 p. m. the temperature fell from 62° to 34°. Several persons were injured, and the damage to buildings was estimated at \$2,000.

7th.—A thunderstorm, with light rain, moved east of north over Westfield, N. Y., between 5 and 6 a. m., damaging out-buildings, roofs, etc., to the extent of about \$3,000. A storm of rain and sleet, changing to snow, began at Ithaca, N. Y., at 6 a. m. A thunderstorm, with heavy rain and high wind, moved northward over Jamestown, N. Y., at 7 a. m. A thunder, rain, and hail storm moving east was reported at Falconer, N. Y., at 7.15 a. m. At Springville, N. Y., a thunderstorm moved north at 7.30 a. m.; a barn was wrecked, killing one person and 4 head of cattle. A southerly gale prevailed at Dunkirk, N. Y., from 7 to 9 a. m. At Fredonia, N. Y., a light thunderstorm, moving north with heavy rain, began 6.30